NSCI 120 Syllabus Fall 2014

COURSE OBJECTIVES AND OUTCOMES:
Students learn the process of scientific research by investigating an open-ended research challenge posed by local laboratories from the Texas Medical Center & Rice University. Teams of students work in developing and characterizing diverse research methods to address the challenge.

Course objectives. Students should learn:

1. How to address an open-ended research challenge,
2. To work collaboratively on a team to apply the scientific method solving the challenge,
3. To communicate the critical steps in the research process in written and oral formats.

Course outcomes/skills. : At the end of the class students will have gained skills relevant to their future laboratory work both in teaching and independent research labs. Students completing this course should be able to:

1. Understand a research question, both the 'big picture' and specific challenge,
    a. How to actually define a goal for a research project
    b. How to determine if/when the goal is achieved
2. Conduct background research in the existing literature to understand a research challenge and identify relevant published work relevant to the question at hand,
3. State a clear hypothesis they can test,
4. Design an experiment, effectively incorporating both positive and negative controls, and articulate how the experiment will prove or disprove the hypothesis
5. Conduct the experiment, keeping a detailed notebook describing their experimental design, recording all research activities, and collecting the obtained and communicate a clear conclusion for each experiment (Understand how negative results can advance their research goals and appropriately re-design their project
6. Learn basic laboratory skills relevant to their project area,
7. Interpret the data collected and articulate conclusions supported by their observations,
8. Communicate their research findings in written & oral formats.

Team Formation and Expectations
Active, productive engagement is expected of all students. Teams will be formed based on student interest and skills. Students will work in their design team throughout the entire semester. Students will have research team meetings during most class periods. For this reason, attendance in class is expected of all students expect for illness or family emergency. Research teams are also expected to meet outside of class.

Each member of the team is expected to contribute equally to the project. While types of contributions will vary, effort should be comparable. It is also important that regular team requirements rotate. For

example, one person should not act as the recorder for every meeting; rather, everyone on the team should take turns with this job.

Peer evaluation of student design teams will be conducted using the online CATME system. Instructor input will be valued as well, using the process described below.

Prerequisites:
None

Meeting Time and Location:
T/TH 10:50 AM -12:05 PM, Location GRB W114

Course instructors:

Dr. Veronica Leautaud
VL2@rice.edu
BRC Room 174-C
Office Hours: Monday/ Friday 10:00-11 or by appointment

TA: Kim Ludick kcraath@gmail.com
Andrea Mansur andrea.p.mansur@rice.edu
Amanda Gutierrez amanda.gutierrez90@gmail.com

Method of Instruction:
Class will be based on short lectures addressing the steps of the scientific method and topics like searching the literature, defining a hypothesis, and the ethics of research, short -in class exercises and lab work conducted in class. Students will work with their teams during class, as well as having access to the lab on other mornings as needed. TAs will always be able to work with students during normally scheduled lab time. If a student wants to work in the lab outside the normal lab time, there must be a TA or instructor supervising the lab, and the student must arrange for one of them to accompany them in advance. Project mentors/clients will be available by appointment to meet with teams.

Method of evaluation:

Notebook reviews	20%
Class exam 1	10%
Project report 1: Literature review & project statement	15%
Oral presentation 1	10%
Project report 2:	
Draft	6%
Final report	14%
Oral presentation 2	15%
Project/team participation	10%
Total	100%

If you believe that a mistake has been made in grading your notebooks, report or exam, you have ONE WEEK to request a re-grade in writing. After one week has passed I will not consider any requests to re-grade your work.

Notebook reviews: Each student is expected to keep a laboratory notebook throughout the semester, in accordance to the guidelines that will be outlined in class. For each experiment, a clear description of the goal of the experiment, experimental plan, results and conclusions will be clearly written (it is important that others can read your work- so neatness counts!). Notebooks will be collected for grading and review 3 times during the semester.

Project reports (one per team): Printed reports are due at the beginning of class on their due date. Late assignments will have a 50% maximum grade and will only be accepted one week after the assigned due date. For project report #2, you will first turn in a draft of the report, that will be graded and correspond to 6% of your grade. Review your report and incorporate any feedback you receive from the first draft. The revised final version of the repot accounts for 14% of your class grade. Reports should be your own, but general methods of working problems may be discussed with others.

Formatting/Submission of papers: The first report (literature review and hypothesis development) should be a maximum of 2 pages (not including references), and the final report has a maximum of 3 pages (not including references). All papers should be 1.5 spaced-spaced in 12-point Times New Roman font with 1-inch margins on each side. Your team name, the date, and the course/section should appear on the header of each page.

References must be clearly cited in both reports. American Medical Association citation style should be used for all papers. Information on this citation format can be found here:
http://medlib.bu.edu/facts/faq2.cfm/content/citationsama.cfm

Exams: One exam will be given throughout the semester, corresponding to 10% of the grade.

Oral presentations: Oral presentations will be given two times during the semester. All team members must present in both.

Project /team participation: A team participation score will be given three times during the semester and will range from 0 to 100%. The individual team participation grade is based on technical contribution, peer evaluation, instructor evaluation, self-evaluation, attendance, etc. Peer evaluation will be formally evaluated using the CATME software. Participation also includes attending lab, completing assignments, contributing to class discussions, and arriving on time. You may have 2 unexcused absences. If you have a family emergency, an approved sporting event, or an illness that requires you to miss class, please inform me in advance.
The course instructor makes the final decision about a student's team participation score, which counts as 10% of the final grade

Honor System Policy: As with all endeavors at Rice, you are expected to adhere to the Honor Code and follow the guidelines given in the Blue Book. Exams are given under the honor system. Students are encouraged to work together collaboratively on the projects, but each student is expected to contribute an equal share to the final project. Plagiarism includes copying or using a resource without proper citation (to include appropriating the ideas of another person without accrediting the source).

American Medical Association citation style should be used for all assignments where citations are needed. Information on this citation format can be found here: http://medlib.bu.edu/facts/faq2.cfm/content/citationsama.cfm

Students are encouraged to bring any concerns involving academic integrity to the attention of the instructor. More information can be found at www.ruf.rice.edu/~honor**.** If at any point, you are unclear about the honor system and how it works, please contact me.

Disabilities: If you have a documented disability that requires accommodation, please let me know so that we can confidentially discuss your needs. You will also need to register with the Disability Support Services Office in the Ley Student Center.

Owlspace : All course readings will be uploaded onto OwlSpace. I will use this as a primary means of interfacing with the class outside of course times. Make sure to check this site frequently for course updates or additional course materials.

Extra credit: Extra credit opportunities will be presented throughout the semester. Any extra credit will be added to individual efforts, such as the exam, or the final grade. Extra credit opportunities may include completing pre- and post-assessment inventories, attending special seminars, completing mid-term and final assessments of the class, etc. Opportunities will be announced in class.

Expectations about E-mail and Laptop Use in Class : While you may use a laptop or a hand-held device during class, you should not be surfing the internet, reading e-mail, or sending text messages during the class period. I welcome e-mailed questions and concerns about your work and the course in general. Please ensure that your e-mailed notes include a salutation, closing statement and your full name. E-mailed notes should be written in a professional manner.

***This syllabus is a plan for the course, and is subject to change at the discretion of the instructor. Any changes will be announced. ***